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XLIII. *An Account of what appeared on
Opening the Body of an asthmatic Person:
By W. Watson, M. D. F. R. S.*

To the Royal Society.

Gentlemen,

Read July 12,
1764.

AS nothing tends more to illustrate the nature of uncommon diseases than the examination of morbid bodies after death, I take the liberty of communicating the following history.

Mr. W. aged twenty eight, consulted me at the latter end of November 1763. He had for about two months laboured under great difficulty of respiration, for which he had taken great variety of medicines without any relief. He had been largely bled, which, without helping his respiration, had greatly depressed and weakened him. The air of the country, where he had resided some time, made not the least alteration in his complaint, which daily grew worse.

When I saw him, his breathing was exceedingly difficult; the heat of his flesh moderate; his pulse too quick, beating about an hundred strokes in a minute, and withall low and thready, indicating great want of fluid in the arterial system. He coughed very frequently, and what he expectorated was viscid; but neither purulent nor bloody, and in no great quantity. He was without thirst. His nights were almost without sleep, on account of the difficulty

culty of respiration; he not having been able to lie down in bed for some time, more especially on his right side.

To relieve him, I ordered at intervals blisters to his legs and side, which, though they discharged liberally, did scarce help his respiration. I likewise during about ten days, that I saw him, directed solutions of the foetid gums, volatiles, *Conf. Damocratis cum Vino Antimon.* Vinegar of squills, volatile oily mixtures, and other antispasmodics and attenuants with plentiful dilution. The *Confect. Damocratis cum Vino Antimoniali* at first much relieved him, and he was enabled to lie down in his bed; but this relief was temporary.

He generally grew hot, and more uneasy towards evening; and one night, during my attending him, he was seized with a violent pain in his right side. For this he lost seven ounces of blood, which, though it somewhat sunk him, very much abated the violence of his pain.

Frequently likewise in the night, notwithstanding that the season was cold, he, on account of the difficulty of his respiration, ordered and insisted upon the windows of his chamber being opened, to gratify himself with yet cooler air than that of his chamber.

Two or three days before he died, his respiration was extremely laborious; he sweated profusely; and his strength growing less and less, he expired without the least convulsion.

Several days before his death, he took large doses of Vinegar of squills four or five times a day. This, though it did not in the least offend his stomach, did
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not promote his expectoration, which still continued viscid.

From a careful consideration of this disease, I was of opinion, that it was confined to the lungs: that these, especially on the right side, adhered to the pleura: that their substance was occupied by tubercles, or something analogous thereto, which greatly disturbed their functions. The feverish heat and quick pulse I considered as symptomatic of, and occasioned by, his extremely laborious respiration.

As I was very desirous of seeing the state of his lungs after death, my request to satisfy myself was complied with; and this examination was sufficiently convincing, that the disease was of too severe a kind to admit of a cure.

Upon lifting up the sternum, the lungs were enormously distended with air, which no pressure could force back through the windpipe. This air was extravasate, had burst through the extremities of the *bronchia* and vesicular substance, and had insinuated itself throughout the whole substance of the lungs, in which it was detained by the membrane investing them. In a word, the whole substance of the lungs was in a state truly emphysematous. In several parts this air had formed large bladders, which, though no pressure upon the surface of the lungs could force back, a slight incision into them permitted to escape, and caused the whole lobe to collapse.

Besides this emphysematous affection of the whole substance of the lungs, the pulmonary vein was in all its parts distended into numberless *varices*, many

of which were of the size of the small, or Lucca olive, and were distended with grumous blood. Besides these, there was a larger cyst in the right lobe of the lungs, which was filled with deep-coloured ichor: this lobe adhered to the pleura in great part of its surface. The lungs in general were of a deep red colour, and here and there upon their surface beginning to sphacelate.

The figure of the human heart is that of a cone, divided through its axis; but in this case, the heart's figure was altered, and was more compressed than usual; and its ventricles distended with grumous blood.

Every other part of the body was in its natural state.

From this examination we find that in this instance respiration was greatly disturbed, to say nothing of the cyst in the right lobe, nor of the adhesion of that lobe to the pleura, from two manifest and potent causes; viz. the varicose state of the pulmonary vein, and the emphysema throughout the whole substance of the lungs.

The *varices* of the pulmonary vein not only retarded the blood in its passage to the left auricle of the heart; but, occupying a much larger space in the lungs than they naturally should, they left less room for the minute ramifications of the bronchia to extend themselves; and consequently a less quantity of air was taken in at every inspiration than was necessary for the ordinary purposes of life.

But the disorder of the lungs from the *varices* was made infinitely worse by the emphysema. For by the extravasate air possessing so large a portion of the lungs, and which the patient could by no means part
with

with in exspiration, very little room was left for fresh air in inspiration; the lungs, from the emphysema, and from the diseased state of the pulmonary vein, filling almost the whole cavity of the thorax. This not only occasioned an enormous defect in the quantity of air in inspiration necessary to the purposes of life, but by the preternatural compression the motion of the blood was retarded in the lungs, more especially in their smaller vessels. This affected not only the serous extravasation in the cist before-mentioned, but occasioned those general obstructions in the blood vessels of the lungs, which brought on the sphacelated appearance; and finally, by the increase of the complaint, was the cause of death.

This extraordinary distension of the lungs accounted for the heart's being of a more compressed figure than is usually seen.

In the present instance an asthma was occasioned by two causes, either of which has hitherto been scarce considered as conducing thereto; the one an emphysema, and the other a varicose affection of the pulmonary vein. Had the causes of this disease been as perfectly known during the life of the patient, as since his death, the case would not have admitted of a cure; as there was no method of discharging the extravasate air from the lungs; neither could any medical process alter or amend the varicose state of the pulmonary vein.

Such a state of lungs, as that just now described, in an otherwise healthy young man, could not, I was persuaded, happen but from some very powerful cause; and, upon enquiry, I was informed, that about the beginning of October, not two months before his death, from something which had greatly offended

his stomach, he was seized with violent and long continued vomitings. These, though at length they were quieted, left his chest very sore. From this time his cough became troublesome, as did remarkably his shortness of breath upon the least motion, attended with the several circumstances above described.

From considering the history of this disease, and comparing it with the appearance of the lungs after death, I cannot but be of opinion, that the violent efforts to vomit occasioned primarily both the emphysema, and the *varices* of the pulmonary vein. This opinion, I flatter myself, will not, to persons well versed in the animal œconomy, seem ill founded, when they reflect how forcibly the lungs are pressed in violent efforts to vomit, both by the muscles subservient to respiration and the abdominal muscles, as well as by the contents of the abdomen itself. And it is wonderful, when the texture of the lungs is considered, that accidents of this kind do not much oftener happen, not only in vehement reachings to vomit, but in violent coughs, pains of childbirth, lifting great weights, and other preternatural exertions of strength.

When once the extremities of the bronchia and the vesicular substance have given way, the mischiefs are easily foreseen. The air getting loose into the substance of the lungs cannot be parted with in expiration; it consequently is retained there, and the space it occupies prevents as much of the external air being received into the lungs as its own quantity. As, from their incessant motion, injuries to the lungs are not easily removed, when once a rupture is made, every fit of coughing or other violent exertion extravasates more air. Hence the rupture

ture still continuing, and probably increasing, more and more air becomes extravasate, until, as in the present case, the quantity becomes so great, as not only to impede the course of the blood through the lungs, but the internal pressure of the extravasate air prevents the ingress of a quantity of fresh air, sufficient to cool and attenuate the blood. In fact, a small part only of the lungs is employed; as the extravasate air, though still in an elastic state, answers by no means the purposes of fresh air in respiration; as the former, by its confinement in the lungs, is very soon divested of its vivifying spirit, that principle which is soon destroyed in animal bodies, and which some chemical physiologists have supposed to be an acid nitrous Gas, and is most essential to human life. Hence, in a very short time, the effects are too obvious to be mentioned; and death must soon follow, as happened to the person, who is the subject of this communication.

I am, with all possible regard,

Gentlemen,

July 6, 1764.

Your most obedient

Humble servant,

W. Watson.